

# APPARATUS AND METHOD FOR REDUCING METAL OXIDES ON SUPERALLOY ARTICLES

## Abstract

A method of removing a metal oxide from an alloy surface of an article, such as a superalloy turbine blade for a gas turbine engine, by contacting the alloy surface within the vacuum environment of a vacuum chamber with a reductive plasma for a time sufficient to reduce the metal oxide. Typically, the reductive plasma stream is provided by a plasma torch that electrically charges a stream of hydrogen gas, most typically mixed with a much greater portion of an inert gas such as 95% argon, to generate an active plasma stream of  $H_3^+$  ions. Typically, a biasing circuit is made between the plasma torch and the alloy article to direct the plasma stream to the alloy surface.